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Facsimile Transmittal Sheet

Date:	October 23, 2003
To:	Thái-An N. Ton. Ph.D., Art Unit 1632
	U.S. PATENT AND TRADEMARK OFFICE
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From:	J. Michael Schiff, Ph.D.
Page 1 of	11 (including cover and ending sheet)

Re: U.S. Patent Application Serial No. 10/039,956
Geron Docket No. 091/009C

OFFICIAL FILING
Transmittal, Response to Restriction Requirement and Preliminary Amendment for
USSN 10/039,956
Please enter this paper into the Patent File.

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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	10/039,956
Filing Date	October 23, 2001
First Named Inventor	Melissa K. Carpenter, et al.
Art Unit	1632
Examiner Name	Thai-An N. Ton
Total Number of Pages in This Submission: 5	Attorney Docket Number: 091/009C

ENCLOSURES *(Check all that apply)*

- ☐ Fee Transmittal Form
- ☐ Fee Attached
- ☐ Amendment/Reply
- ☐ After Final
- ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Response to Missing Parts/ Incomplete Application
- ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s) ____
- ☐ After Allowance communication to Group
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to Group (Appeal Notice, Brief, Reply Brief)
- ☐ Proprietary Information
- ☐ Status Letter
- ☑ Other Enclosure(s) (please identify below):

Remarks

1. Response to Restriction Requirement and Preliminary Amendment (8 pages)

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	J. Michael Schiff, Registration No. 40,253
Signature	
Date	October 23, 2003

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

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Signature	Makarusky	Date	October 23, 2003

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Name

October 23, 2003
Date

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors: Melissa Carpenter et al.

Filing Date: October 23, 2001

Serial No: 10/039,956

Docket: 091/009c

Title: TECHNIQUES FOR GROWTH AND DIFFERENTIATION OF HUMAN PLURIPOTENT STEM CELLS

Art Unit: 1632

Examiner: Thái-An N. Ton, Ph.D.

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RESPONSE TO RESTRICTION REQUIREMENT AND PRELIMINARY AMENDMENT

Commissioner for Patents
Alexandria VA 22313

Dear Sir,

This paper is responsive to the Restriction Requirement mailed on September 23, 2003, for which a shortened statutory period for reply is set to expire on October 23, 2003. Accordingly, this paper is timely filed.

Please enter the following amendments and remarks.

CLAIM AMENDMENTS

1. *(Original)* A composition comprising proliferating primate pluripotent stem (pPS) cells, which is essentially free of feeder cells.

2 to 10. *CANCELLED*

11. *(Original)* A method for producing differentiated cells from a donor culture of undifferentiated primate pluripotent stem (pPS) cells, comprising:

a) preparing a suspension of cells from the undifferentiated donor culture;

b) replating and culturing the suspended cells on a solid surface so that they differentiate without forming embryoid bodies; and

c) harvesting differentiated cells from the solid surface.

12. *(Original)* A method for producing differentiated cells from a donor culture of primate pluripotent stem (pPS) cells, comprising:

a) providing a culture of primate pluripotent stem (pPS) cells that is essentially free of feeder cells;

b) changing the medium in which the cells are cultured; and

c) harvesting differentiated cells after culturing for a time in the changed medium.

13. *(Original)* The method of claim 11, wherein the donor culture of pPS cells is a culture essentially free of feeder cells, according to ~~any of claims~~ claim 1.

14. *(Original)* The method of claim 11, having at least one of the following features:

i) the solid surface bears a poly-cation (such as poly-lysine or poly-ornithine);

ii) differentiation is promoted by withdrawing serum, serum replacement, or a factor that inhibits differentiation from medium in which the cells are cultured after replating; or

iii) differentiation is promoted by adding a factor (such as Brain Derived Neurotrophic Factor, BDNF; or Neutrotrophin-3, NT-3) that promotes differentiation in medium in which the cells are cultured after replating.

15. *(Original)* A differentiated cell population produced by the method of ~~claim 10~~ claim 35.

16. *(Original)* A method of screening a compound for cellular toxicity or modulation, comprising contacting a differentiated cell according to claim 15 with the compound, determining any phenotypic or metabolic changes in the cell that result from contact with the compound, and correlating the change with cellular toxicity or modulation.

17. *(Original)* A method for producing a polynucleotide comprising a nucleotide sequence contained in an mRNA that is expressed at a different level in committed or differentiated cells compared with undifferentiated primate pluripotent stem (pPS) cells, the method comprising:

a) determining the level of expression of a plurality of mRNAs in committed or differentiated cells, in comparison to the level of expression of the same mRNAs in undifferentiated pPS cells;

b) identifying an mRNA expressed at a different level in the committed or differentiated cells, relative to the undifferentiated pPS cells; and

c) preparing a polynucleotide comprising a nucleotide sequence of at least 30 consecutive nucleotides contained in the identified mRNA.

18 to 29. *CANCELLED*

30. *(Previously Presented)* A method for producing a protein containing a sequence of a polypeptide expressed in undifferentiated or differentiated pPS cells, comprising determining amino acid sequence from a protein encoding region of an mRNA or cDNA from an expression library, and manufacturing a protein containing the determined sequence;

wherein the expression library was obtained by providing a culture of undifferentiated pPS cells essentially free of feeder cells, optionally permitting the pPS cells to differentiate, and isolating mRNA from the undifferentiated or differentiated cells.

31. *(Previously Presented)* A method for producing an antibody specific for a polypeptide expressed in undifferentiated or differentiated pPS cells, comprising determining amino acid sequence from a protein encoding region of an mRNA or cDNA from an expression library, and immunizing an animal or contacting an immunocompetent cell or particle with a protein containing the determined sequence;

wherein the expression library was obtained by providing a culture of undifferentiated pPS cells essentially free of feeder cells, optionally permitting the pPS cells to differentiate, and isolating mRNA from the undifferentiated or differentiated cells.

32. *(Original)* The composition of claim 1, wherein the pPS cells are human embryonic stem (hES) cells.

33 to 34. *CANCELLED*

35. *(Original)* A method for producing a population of differentiated cells, comprising:

a) obtaining a line of embryonic stem cells that have been established in a culture environment that is essentially free of feeder cells; and

b) causing cells in the culture to differentiate into the population of differentiated cells.

36. *CANCELLED*

37. *(New)* A method of screening a substance for its effect on cultured cells, comprising:

a) obtaining a culture of undifferentiated pPS cells proliferating in a growth environment that is essentially free of feeder cells;

b) optionally causing or permitting the pPS cells to differentiate; then

c) combining the cells with the substance; and

d) determining any effect of the substance on the cells.

38. *(New)* The method of claim 37, wherein the undifferentiated pPS cells are cultured on extracellular matrix components (such as Matrigel®, laminin, or collagen) in the absence of feeder cells.

39. *(New)* The method of claim 37, wherein the cells are undifferentiated when contacted with the substance.

40. *(New)* The method of claim 37, wherein the cells have been caused or permitted to differentiate before being contacted with the substance.

41. *(New)* The method of claim 40, wherein the cells have been caused to differentiate by a process comprising replating them onto a surface that promotes differentiation.

42. *(New)* The method of claim 40, wherein the cells have been caused to differentiate by adding component(s) to the medium that promote differentiation towards a particular cell lineage.

43. *(New)* The method of claim 40, comprising causing the cells to differentiate into cells having characteristics of neuronal cells, glial cells, or neural precursors.

44. *(New)* The method of claim 40, comprising causing the cells to differentiate into cells having characteristics of hepatocytes.

45. *(New)* The method of claim 37, wherein the pPS cells are human embryonic stem (hES) cells.

46. *(New)* The method of claim 37, comprising determining the effect of the substance on growth of the cells.

47. *(New)* The method of claim 37, comprising determining whether the compound affects differentiation of the cells.

48. *(New)* The method of claim 37, comprising determining whether the compound affects expression of a marker or receptor by the cells.

49. *(New)* The method of claim 37, comprising determining whether the compound affects release of a marker or enzyme from the cells

50. *(New)* The method of claim 37, comprising determining whether the compound affects DNA synthesis or repair in the cells.

51. *(New)* The method of claim 37, comprising analyzing the cells by metaphase spread.

52. *(New)* The method of claim 37, comprising determining whether the compound is toxic to the cells.

AMENDMENT TO THE TITLE

Please change the TITLE of the application as follows:

~~TECHNIQUES FOR GROWTH AND DIFFERENTIATION OF HUMAN PLURIPOTENT STEM CELLS~~

USE OF HUMAN EMBRYONIC STEM CELLS FOR DRUG SCREENING AND TOXICITY TESTING

REMARKS

Claims 1-22 and 30-36 as previously presented are subject to a Restriction Requirement under 35 USC § 121 between claims in twelve groups.

As a result of entering this amendment, claims 1, 11-17, 30-32, 35, and 37-52 are now pending. Entry of the claim amendments does not introduce new matter into the disclosure. Support for the new claims may be found at various places in the specification, such as the following:

- Claims 37, 39, and 46-52 are supported by the section from page 34, line 40 to page 35, line 21 of the application as filed.
- Claim 38 is supported by claim 3 as originally filed.
- Claim 45 is supported by claim 32 as originally filed.
- Claims 39-44 are supported by the section from page 22, line 22 to page 24, line 36.

The amendments are made to obtain coverage for certain aspects of the invention that are of current commercial interest. Subject matter encompassed by the cancelled claims are being pursued in other applications (e.g., USSN 09/530,346; 09/688,031; 09/849,022; 09/859,291; 09/900,752; 09/994,440; 10/013,205; 10/087,473; 10/235,094; 10/330,873). Applicant reserves the right to introduce claims to subject matter previously claimed or described in the disclosure in this or any other application.

The title is amended to reflect the subject matter elected for examination. Applicant requests that the Examiner amend the Patent Office file accordingly.

Election of Group for Examination

Applicant hereby elects new method claim 37 for prosecution on the merits, along with any other of the pending claims that fall within the same group.

It is respectfully submitted that the elected group also includes method claims 38-52, which depend from claim 37 and incorporate its limitations. It is also submitted that claim 16 comes within the elected group, since it shares with claim 37 the object of using pPS cells in feeder-free culture, or the progeny of such cells, for the purpose of screening. Accordingly, claims 37-52 and 16 can be examined within the same group without imposing a burden on the Examiner (MPEP § 803).

The election is made without traverse. This is not meant to imply that applicant acquiesces to the propriety of the division of the claimed subject matter, or to the arguments made in support of the division in the Office Action.

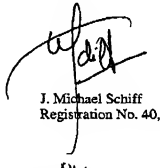
Conclusion

Applicants respectfully request that the application proceed to examination on the merits, in view of the amendment and remarks made herein.

In the event the Examiner determines that an interview would facilitate prosecution of this application, she is invited to contact applicant's representative at the telephone number indicated below.

Should the Patent Office determine that an extension of time or any other relief is required for further consideration of this application, applicant hereby petitions for such relief, and authorizes the Commissioner to charge the cost of such petitions and other fees due in connection with the filing of these papers to Deposit Account No. 07-1139, referencing the docket number indicated above.

Respectfully submitted,



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October 23, 2003

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